FERTILIZER AND MINING DIVISION

Stauffer Chemical Company
Manila Star Route / Vernal, Utah 84078 / Telephone (801) 789-2233

December 28, 1979

Mary Ann Wright
Reclamation Biologist
Division of Oil, Gas, and Mining
1588 West North Temple
Salt Lake City, Utah 84116

Dear Ms. Wright:

The following comments are submitted in response to your August 2, 1979, letter requesting more information concerning the mined land reclamation plan for the Vernal Mine.

Concerning the reclamation of the present tailings area, paragraph #2, Stauffer will impound no more than nine (9) vertical feet of water in the lowest part of the area being drained by the spillway.

Concerning Division recommendations in working towards an approved plan, paragraph #2, Stauffer agrees to provide notice prior to constructing "road fill" structures across major drainages. The data outlined in your December 17, 1979, letter and prepared by Mike Thompson will be supplied with the following exception: A standard USGS map of the general area will be submitted rather than a 1" = 500' scale map (paragraph #6).

It must also be understood that "road fill" structures, as used above, are not waste dumps later modified to accomodate a haulroad, but are long, narrow, relatively high structures constructed for the primary purpose of crossing a drainage for access purposes.

The following information is submitted as a basis for working out a surety agreement in the form of a reclamation contract, paragraph #6.

(a) Attached is a map of the immediate mine plan area delineating those areas disturbed prior to 1975 and those areas disturbed since 1975. Included in those areas disturbed since 1975 are areas disturbed prior to 1975, but utilized since that time.

(b) The total number of acres disturbed as outlined on the attached map (31-200B) are broken down as follows:

	Pre 1975	Since 1975	Total
Plant Site		87	87
Tailings Dam #1		29	29
Tailings Dam #2		67	67
Mines & Dumps	388	42	430
Haulroads	n/a	26	26
Access Roads	n/a	19	19
Misc. Roads	12		12
	400	270	670

(c) At the anticipated mining rate of 1.4 MM TPY of ore, the green shaded area on Dwg. #31-200A represents approximately 15 years of mining reserve. At the rate of 1.4 MM TPY of ore, approximately 30 acres per year of new land will be disturbed. It will be stauffer's policy to reclaim as many acres per year as are disturbed during that particular year. Therefore, since 270 acres are now subject to the State's reclamation requirements, since it is anticipated that at least 30 more acres will be disturbed before a comprehensive reclamation plan is developed (one year's mining activity), and since it will be Stauffer's policy to reclaim in any one year as much area as is disturbed that year, the average number of acres which would be in a disturbed state during any given year would be approximately 300 acres.

(d) When reclamation activities are conducted in conjunction with ongoing mining activities, reclamation costs can be minimized. Stauffer's experience to date, based on S.E. Idaho reclamation activities, is that reclamation costs, per se, run about $500 per acre. Included in that cost are seed bed preparation, seed and fertilizer, and a minimum amount of contouring and reshaping. Applying that cost against the average number of acres that would be in a disturbed state during one year amounts to a total of $150,000. Rather than posting a bond, I'm sure Stauffer would much rather enter into a reclamation contract whereby the reclamation requirements eventually agreed upon will be carried out under the personal guarantee of the Mine Operator (Stauffer Chemical Co.).

Concerning Stauffer Chemical Company's commitment to develop a reasonable revegetation program pursuant to the requirements of

Rule M-10 (12), paragraph #7, the following summary information is submitted and attached to this letter.

(1) Soil Conservation Service Plots - 1978
(2) Utah Division of Wildlife Resources Plots - 1978
(3) Stauffer Chemical Company Test Plots - 1979
(4) Long Range Revegetation Program

The draft "Mine Land Reclamation Contract" you submitted for our review on December 17, 1979, has a number of requirements that need to be reviewed by Stauffer's legal counsel. Also, some of the provisions do not agree exactly with what is outlined in this letter. In light of this, we would like to rewrite the draft and submit a counter proposal for your review.

Please do not hesitate to call me if you have any questions.

Yours very truly,

STAUFFER CHEMICAL COMPANY

F. L. Riding,
Plant Manager

FLR/db

enclosures (4)
cc: D. L. King, Jr.
T. J. Scheffel

LONG RANGE REVEGETATION PROGRAM

Stauffer Chemical Company - Vernal Mine

Stauffer Chemical Company intends to exert a reasonable effort to comply with the State of Utah, Division of Oil, Gas and Mining reclamation requirements.

All waste dump slopes will be graded to an angle of 2½:1 (22^{o}) to decrease soil erosion and facilitate the establishment of plant material.

Whenever possible, topsoil or subsoil will be placed on the waste dump areas just prior to seeding.

If the experimental plots of 1979 indicate that fertilizer will improve seeding success at a reasonable cost, then soil tests will be performed to determine the nutrient requirements.

All seeding will be performed in the fall of the year with a ten foot wide rangeland seed drill.

The area to be revegetated will be ripped to a depth of 2-3 feet to increase the water holding potential. The ripping will be along the contour of the slopes.

Species selection will be a self-sustaining vegetative cover of non-noxiousperennial plants, including both native and introduced types. The exact species selection and seeding rate will be determined from the experimental plots planted in 1978 and 1979. Species selection will also reflect the post-mining land use as set forth in Rule M-10 (1).

Stauffer Chemical Company plans to reclaim, each year, an area equal in size to what is disturbed that year, provided that:

1. Areas are ready for seeding.
2. Weather conditions are favorable.
3. Equipment availability is adequate.

At the current ore production rate of 1.4 MM tpy, that area is estimated to be 30 acres/year.

An annual report will be submitted at the end of each year. It will include the results of the previous year's reclamation work, a discussion of the current year's reclamation activities, and an outline of reclamation plans for the ensueing year.

STAUFFER CHEMICAL COMPANY TEST PLOTS - 1979

Stauffer Chemical Company - Vernal Mine

In order to compile more accurate data for a successful revegetation program at Vernal, Stauffer Chemical Company initiated a species testing program of its own at the mine site in October, 1979. The results of this program, in conjunction with the results of the Division of Wildlife Resources plots and the Soil Conservation Service plots planted at the mine in 1978, will provide the reliable information that is needed to prepare a successful long range revegetation plan.

The test plots were established on an old waste dump slope covering approximately 0.9 acres. The slope aspect ranges from southwest to southeast with a slope angle approximately 2½:1. The plots were placed in strips along the contour of the slope with each plot approximately 10' wide x 250' long.

The only seed bed preparation consisted of ripping the slope along the contour to a depth of 2-3 feet.

The plots were arranged in the following order (top to bottom). See attached exhibit.

1. Grass seed mix
2. Grass seed mix and fertilizer
3. Grass seed mix
4. Grass seed mix and fertilizer
5. Control strip - bare
6. Brush seed mix
7. Brush seed mix and fertilizer
8. Brush seed mix
9. Brush seed mix, straw mulch and fertilizer
10. Control strip - bare
11. Grass seed mix and brush seed mix
12. Grass seed mix and brush seed mix
13. Grass seed mix, brush seed mix, fertilizer and straw mulch
14. Grass seed mix, brush seed mix, fertilizer and straw mulch

The seeding mixtures were a combination of native and introduced species. These were selected from a visual check of the 1978 experimental plots established by the Soil Conservation Service and Division of Wildlife Resources. The mixtures and rates of application are as follows:

Grass seed mix

			lbs/acre
1.	Agropyron riparium (Sodar)	Streambank wheatgrass	4
2.	Agropyron trichophorum (Luna)	Pubescent wheatgrass	3
3.	Elymus junceus	Russian wildrye	4
4.	Agropyron intermedium	Intermediate wheatgrass	2

			lbs/acre
5.	Agropyron spicatum	Bluebunch wheatgrass	4
6.	Oryzopsis hymenoides	Indian ricegrass	3
7.	Medicago sativa (Lahontan)	Lahontan alfalfa	3
8.	Melilotus officinalis	Yellow sweet clover	2
		Pure live seed	25 lbs/acre

Brush Mix

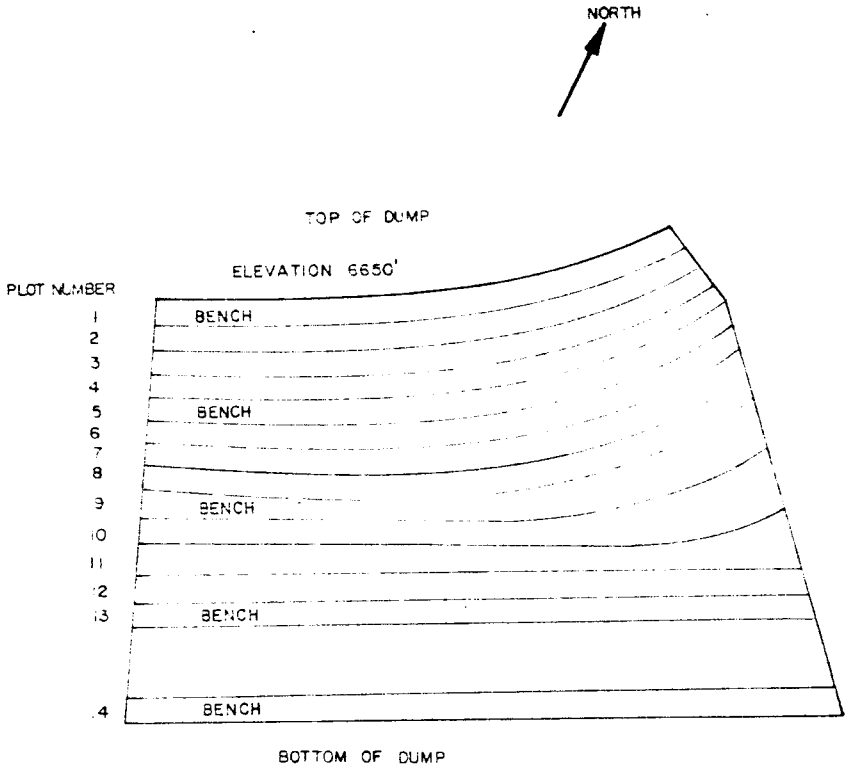
			lbs/acre
1.	Artemesia tridentata	Big sagebrush	7
2.	Purshia tridentata	Antelope bitterbrush	22
		Pure live seed	29 lbs/acre

The fertilizer, 16-20-0, was applied with a broadcast hand spreader at 400 lbs/acre. This will provide 64 lbs/acre available nitrogen and 80 lbs/acre available phosphate. The fertilizer was applied before seeding so that the discs of the rangeland drill could work the fertilizer into the soil.

The straw mulch was applied by hand before seeding to allow the drill discs to crimp the straw into the soil. A second crimping of the straw was done by the drill after seeding.

The seed was planted 1/2" to 3/4" deep with a teen foot wide rangeland drill.

Germination, growth, and percent surface cover for these replication plots will be recorded. The results of fertilizing, mulching, benching, or any combination of these techniques can then be determined.



PLOT REPLICATIONS

1. GRASS SEED MIX
2. GRASS SEED MIX AND FERTILIZER
3. GRASS SEED MIX
4. GRASS SEED MIX AND FERTILIZER
5. CONTROL STRIP - BARE
6. BRUSH SEED MIX
7. BRUSH SEED MIX AND FERTILIZER
8. BRUSH SEED MIX
9. BRUSH SEED MIX AND FERTILIZER AND STRAW MULCH
10. CONTROL STRIP - BARE
11. GRASS SEED MIX AND BRUSH SEED MIX
12. GRASS SEED MIX AND BRUSH SEED MIX
13. GRASS AND BRUSH SEED MIX PLUS FERTILIZER AND STRAW MULCH
14. GRASS AND BRUSH SEED MIX PLUS FERTILIZER AND STRAW MULCH

PLOT SIZE 100FT X 225-295FT
TOTAL REPLICATION AREA - 1.30 ACRES

STAUFFER CHEMICAL COMPANY

PROJECT [illegible] RECLAMATION

TITLE [illegible]

[illegible]

SOIL CONSERVATION SERVICE PLOTS - 1978

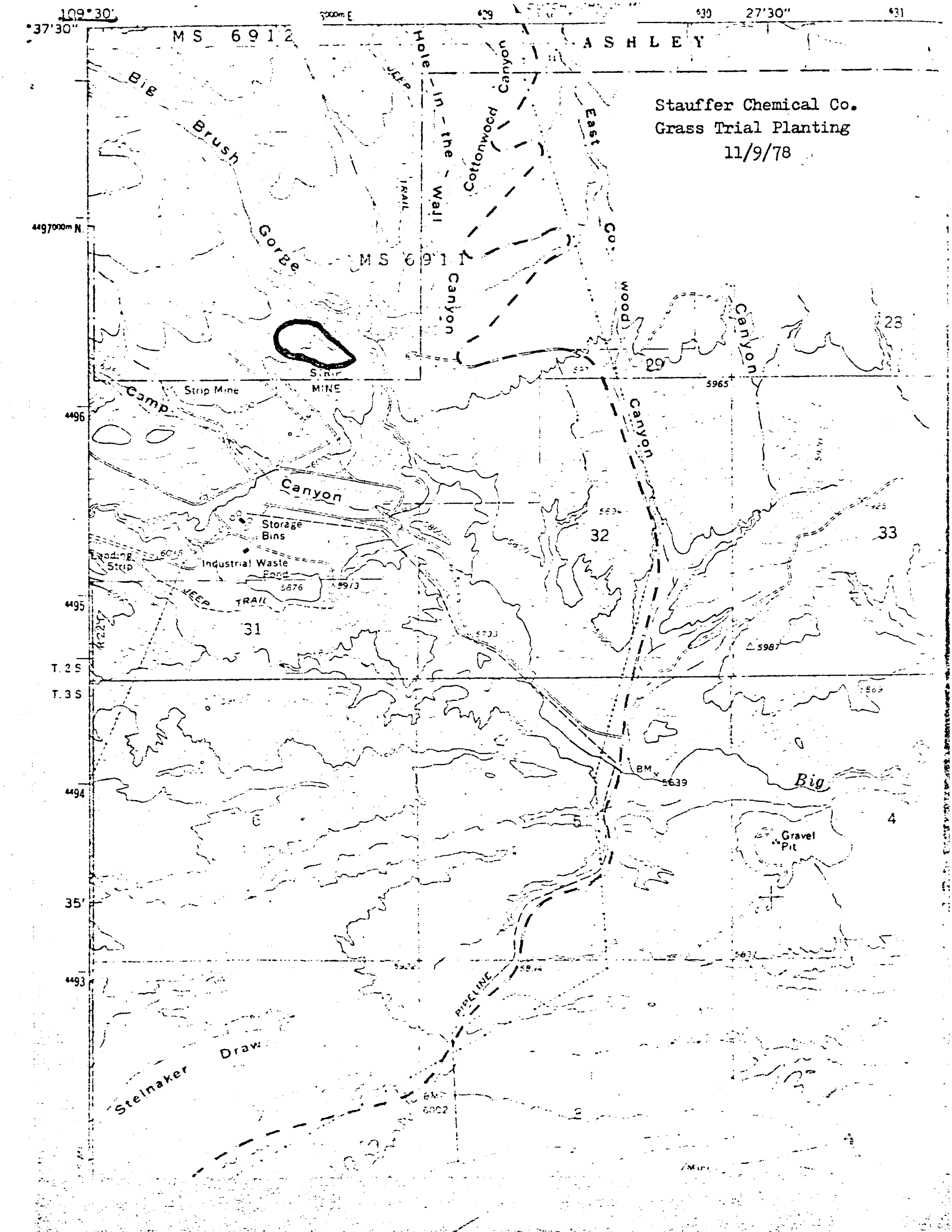
Stauffer Chemical Company - Vernal Mine

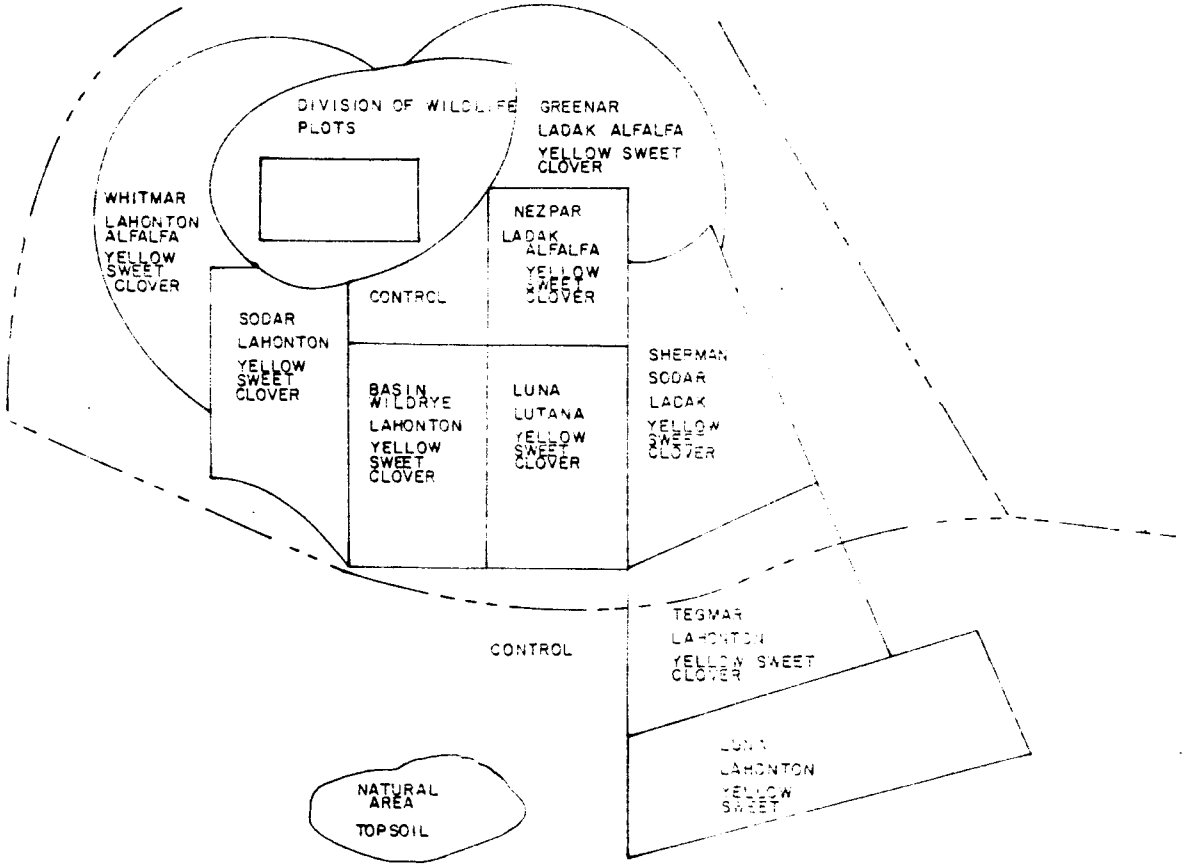
In November, 1978, the Soil Conservation Service stationed at Vernal, Utah, conducted a grass trial planting on one of the recontoured waste dumps at the Vernal Mine. Ten replication plots and several control plots were established. See attached exhibits.

Each of the replication plots was approximately one acre in size. Seed bed preparation consisted of grading the slope to a 2:1 angle with a D-8 dozer. No fertilizer or mulch was applied. Seeding on the contour was accomplished using a ten foot wide rangeland seed drill. The seed was drilled ¼" - ½" deep. The species and rate of application where used is as follows:

			lbs/acre
1.	Agropyron intermedium (Greenar)	Intermediate wheatgrass	12.0
2.	Agropyron spicatum (Whitmore)	Bluebunch wheatgrass	11.4
3.	Agropyron riparium (Sodar)	Streambank wheatgrass	19.1
4.	Agropyron trichophorum (Luna)	Pubescent wheatgrass	24.7
5.	Elymus junceus	Basin wildrye	11.3
6.	Oryzopsis hymenoides	Indian ricegrass	12.2
7.	Poa ampla (Sherman)	Bluegrass	7.3
8.	Astragalus cicer (Lvtana)	Milkvetch	11.1
9.	Medicago sativa (Ladak)	Ladak alfalfa	2.0
10.	Medicago sativa (Lahontan)	Lahontan alfalfa	2.0
11.	Melilotus officinalis	Yellow Sweet Clover	2.0

In August, 1979, the Soil Conservation Service did a visual survey of the plots. Their feelings at that time were "good to fair success".


Stauffer Chemical Co.
Grass Trial Planting
11/9/78
109°30'
37'30"
27'30"
MS 6912
MS 6911
ASHLEY
Big Brush Gorge
Hole-in-the-Wall Canyon
Cottonwood Canyon
East Cottonwood Canyon
JEEP TRAIL
Strip Mine
Camp Canyon
Storage Bins
Loading Strip
Industrial Waste Pond
PIPELINE
Steinaker Draw
Gravel Pit
Big
BM 5639
T. 2 S
T. 3 S
R. 22 E
35'
31
32
33
29
28
6
5
4
2



NORTH

STAUFFER CHEMICAL COMPANY

PROJECT VERNAL RECLAMATION

TITLE SCS PLANTING 1979

R SQUIRES B

1-21-79

NOT TO SCALE

STAUFFER CHEMICAL COMPANY TEST PLOTS - 1979

Stauffer Chemical Company - Vernal Mine

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The seeding mixtures were a combination of native and introduced species. These were selected from a visual check of the 1978 experimental plots established by the Soil Conservation Service and Division of Wildlife Resources. The mixtures and rates of application are as follows:

Grass seed mix

			lbs/acre
1.	Agropyron riparium (Sodar)	Streambank wheatgrass	4
2.	Agropyron trichophorum (Luna)	Pubescent wheatgrass	3
3.	Elymus junceus	Russian wildrye	4
4.	Agropyron intermedium	Intermediate wheatgrass	2

			lbs/acre
5.	Agropyron spicatum	Bluebunch wheatgrass	4
6.	Oryzopsis hymenoides	Indian ricegrass	3
7.	Medicago sativa (Lahontan)	Lahontan alfalfa	3
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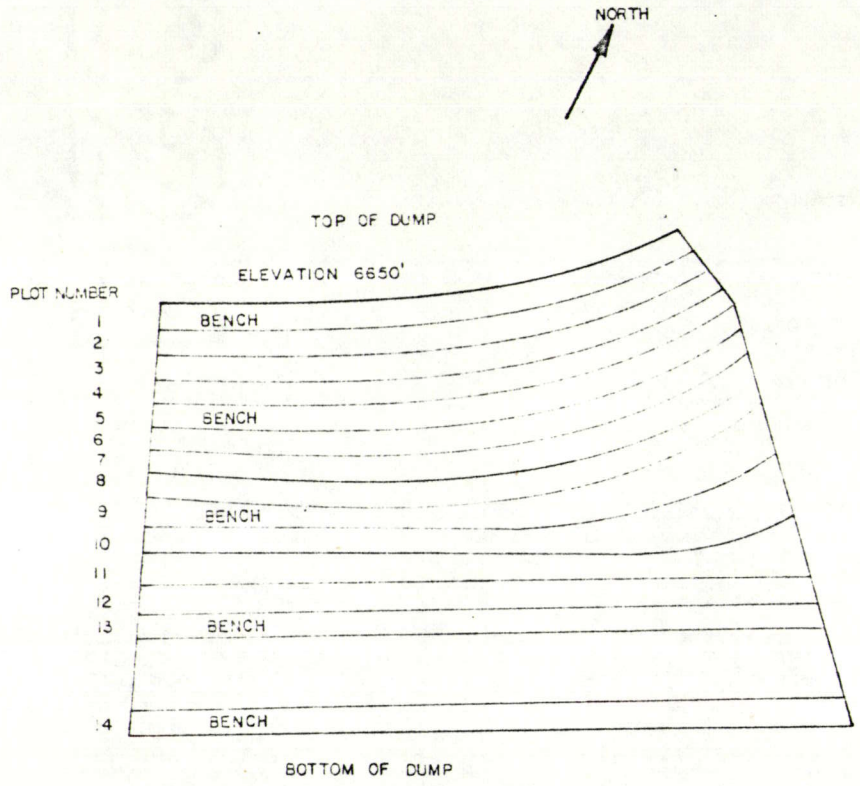

PLOT REPLICATIONS

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13. GRASS AND BRUSH SEED MIX PLUS FERTILIZER AND STRAW MULCH
14. GRASS AND BRUSH SEED MIX PLUS FERTILIZER AND STRAW MULCH

PLOT SIZE 10FT X 225-295FT
TOTAL REPLICATION AREA - .90 ACRES

STAUFFER CHEMICAL COMPANY

PROJECT [illegible]

TITLE [illegible]

[illegible]

UTAH DIVISION OF WILDLIFE RESOURCES PLOTS - 1978

Stauffer Chemical Company - Vernal Mine

As a part of the November, 1978, Soil Conservation Service experimental revegetation test program, the Division of Wildlife Resources, also, established some test plots. See attached sketches. The test area consisted of a species adaptation plot, a hand broadcast area, and a cyclone broadcast area.

Individual plots that comprise the species adaptation plot, 400 in all, measure 3' x 5'. The overall dimensions of the species adaption plot is 100' x 60'.

The hand broadcast area surrounds the species adaptation plot and covers 0.6 acres. The cyclone broadcast area lies to the northeast and is one acre in size.

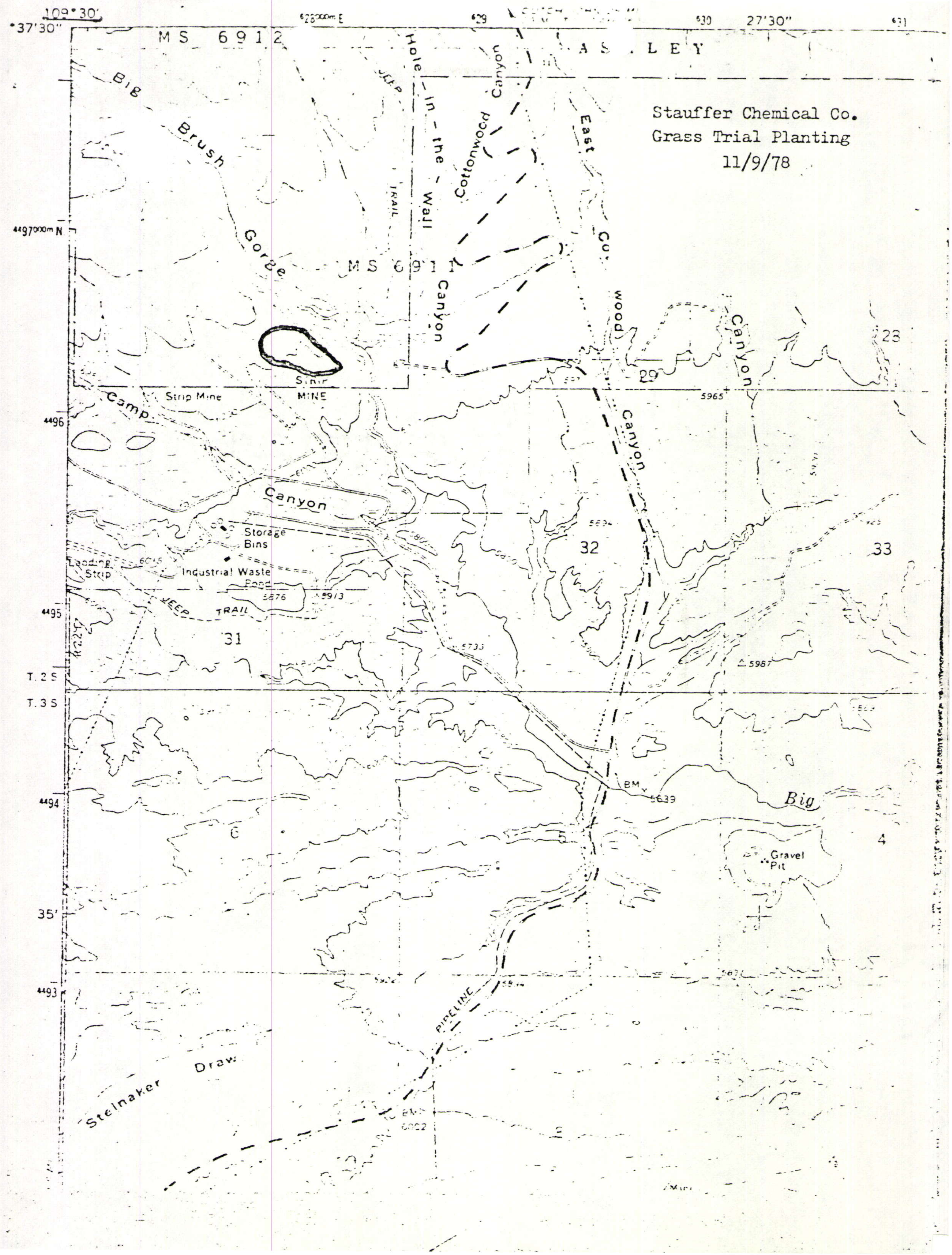
Seed bed preparation for the species adaptation plot consisted of running a D-8 dozer over the area to loosen the ground with the dozer tracks. A furrow, ½" deep, was dug through each of the 3' x 5' plots. Seeds were sprinkled in the furrow about ½" apart and later covered with the fines removed from the furrow. No specific seeding rate was used. (A detailed layout of the species adaptation plot is attached).

Seed bed preparation for both the hand and cyclone broadcast plots consisted of using a pipe harrow to prepare the ground. The areas were then seeded and pipe harrowed again to cover the seeds. The seeding rate for each of these two areas is unknown.

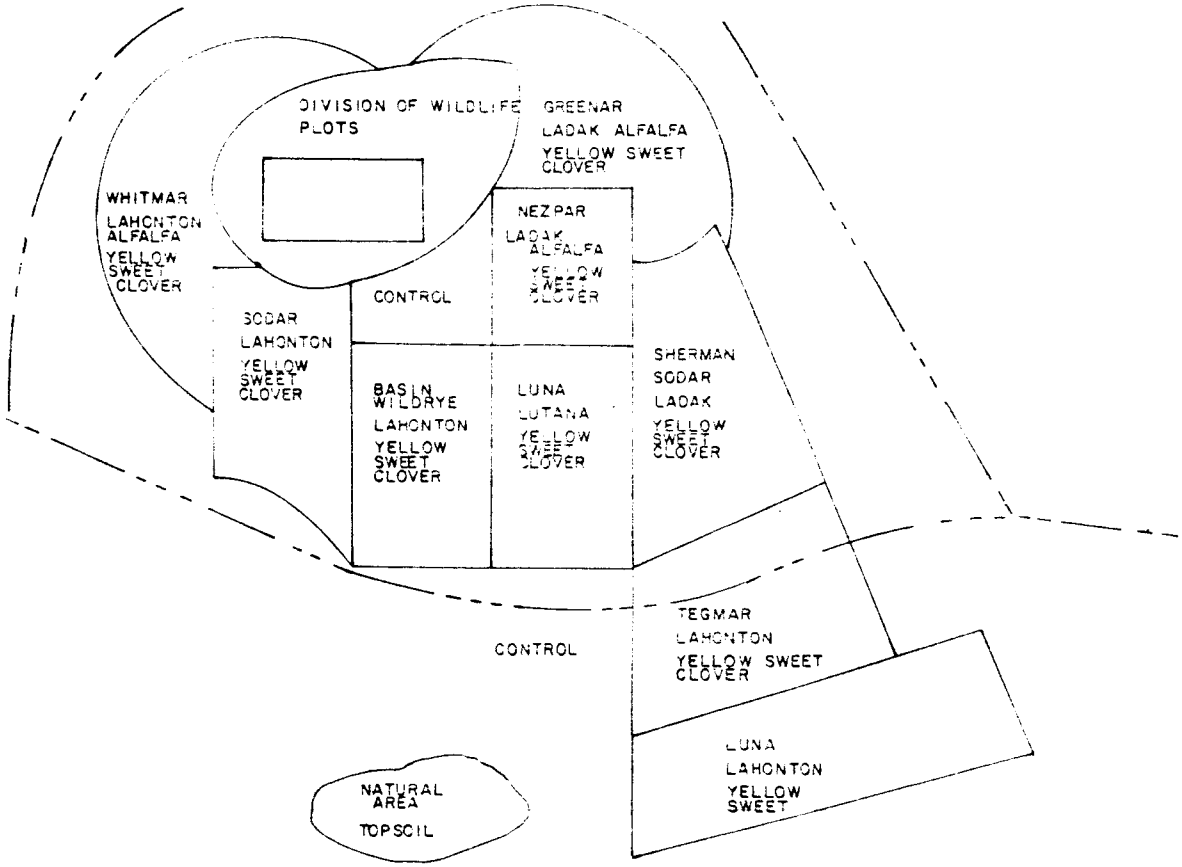
The scientific and common name for the seeds used in the Division of Wildlife Resources plots appear on the attached sheets.

No fertilizer, mulch or irrigation was used for any of the above described plots.

Jim Davis of the Division of Wildlife Resources conducted a visual survey of these plots in July, 1979. He planned on running some survival transects later in the year.



Stauffer Chemical Co.
Grass Trial Planting
11/9/78
109°30'
37'30"
27'30"
MS 6912
MS 6911
Big Brush Gorge
Hole-in-the-Wall Canyon
Cottonwood Canyon
East Cottonwood Canyon
Canyon
JEEP TRAIL
Strip Mine
MINE
Camp Canyon
Storage Bins
Landing Strip
Industrial Waste Pond
31
32
33
29
28
6
5
4
T. 2 S
T. 3 S
BM 5639
5965
5987
5733
5876
5913
Big
Gravel Pit
35'
PIPELINE
Stelnaker Draw



STAUFFER CHEMICAL COMPANY

PROJECT VERNAL RECLAMATION

TITLE SOD PLANTING 978

R SQUARES B

NOTES

NOT TO SCALE

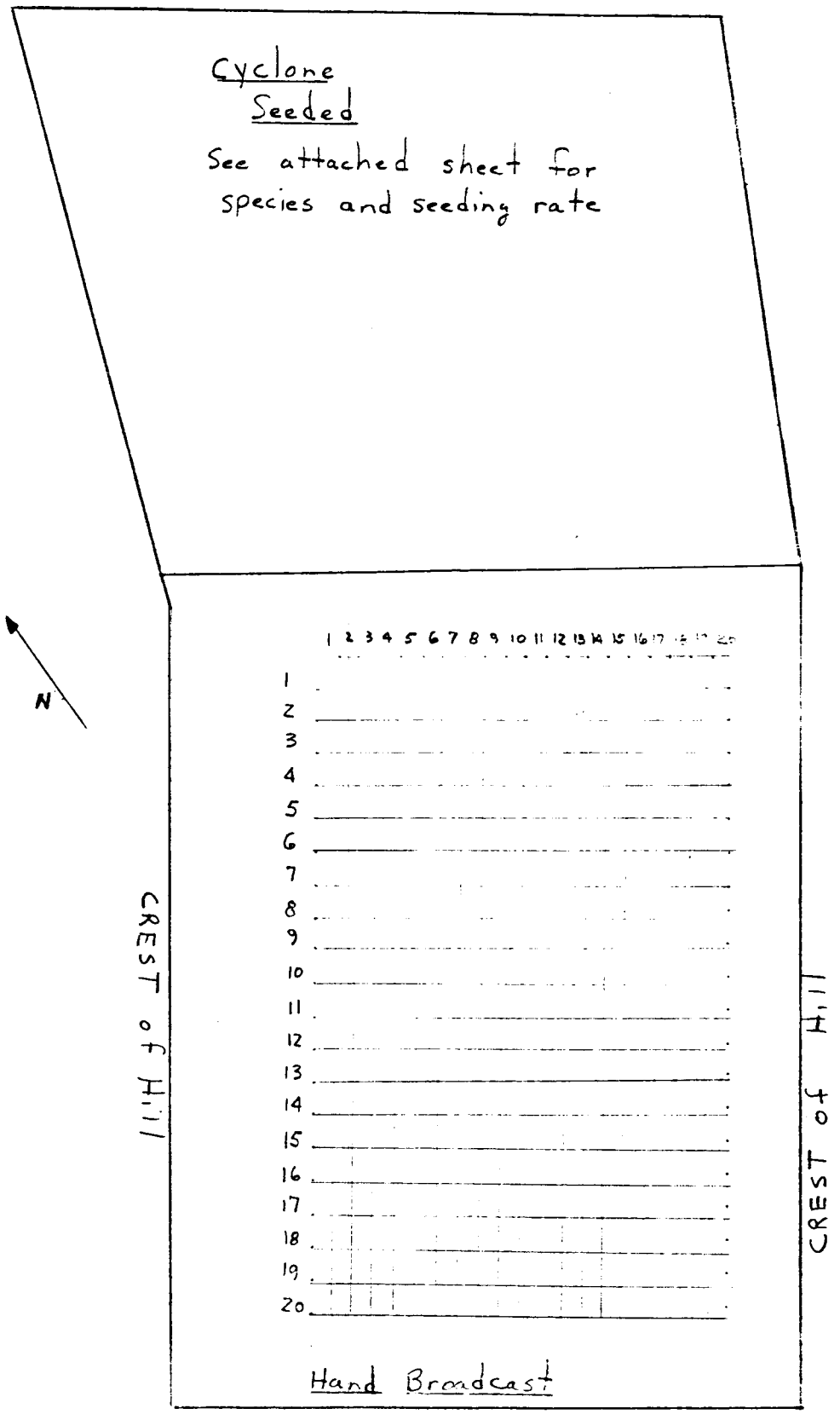
SS-D-60
8, 9 November 1978
Stauffer Chemical Co. Planting

We used a small pipe harrow to help prepare the ground, then we used a cyclone seeder for the smaller cleaned seed and hand broadwasted the remainder of the seed. The area was again pipe harrowed. The following species were used in the "seeding" near the species adaptation plots:

SOIL CONSERVATION SERVICE Hand Broadcasted	POUNDS PER ACRE
Agropyron riparium (Sodar)	Unknown
Agropyron spicatum (Whitmore)	"
Agropyron trichophorum (Luna)	"
Poa ampla (Sherman)	"
Astragalus cicer (Lutana)	"
Medicage sativa (Lahontan)	"
Melilotus officinalis	"

UTAH STATE DIVISION OF WIDLIFE RESOURCES Cyclone Seeded	
Kochia prostrata	4
Artemisia tridentata vaseyana	2
Chrysothamnus nauseosus	2
Ceratoides lanata	2
Atriplex canescens	2
Linum lewisii	1
Sanguisorba minor	1
Agropyron cristatum	1
Medicago sativa	1
Melilotus officinalis	1
Dactylis glomerata	1

Utah State Division of Wildlife Resources
Stauffer Chemical Company Vernal, Utah



Soil Conservation Service Plots on Slope

Species Adaptation Plots - 100' long 60' wide
Each plot 3' x 5'

Not to Scale

Row numbers

N

	100	90	80	70	60	50	40	30	20	10
20	CHNA U5-71 Cache Co. EDM									
19	ARTR[t] Dove Crk. EDM		ARTR U76-76 Clear Crk		ARSP EDM		ARTR[v] U54-77 Gr.Canyon		ARTR[w] U1-76 Trough Spg. EDM	
18	ARTR[v] U8-74 Top Maple Canyon		CEMO U28-63 Salina Canyon		PUTR U102-69 Tropic Res.		ARTR U74-75 Dove Crk.		ARTR[w] U37-76 Evanston	
17	COST U23-67 Black Mtn.		ARTR[v] U5-71 Fairview Canyon		PUTR U88-75 Oregon		CEMO U7-67 Ephraim Canyon		EULA U54-77 Wagon Rd.	
16	EULA U45-77 Dia. Mtn.		ATCA U92-77 Hunting.		ATCA U209-74 Fry Can.		ARNO U26-73 Omar's		KOPR U8-77 C.F.	
15	ARNO U27-73 Beaver Bench		CEMO U41-63 S.F. NF		PUTR U13-69 Cove Valley		KOPR U2-77 C.F.		ATCA U117-77 Omar's	
14	ATCA U103-74 C.F.		ATCA U124-77 Montana		ARTR U7-77 Spr. City		ATCA U88-74 Jericho		ARTR[w] U7-77 C.F.	
13	PUTR U47-70 Colorado		PUTR U28-76 C.Olsen		COST U20-75 A.F.		KOPR U19-77 C.F.		ARTR[v] U19-75 Salina Canyon	
12	PUTR U93-69 Cove Vlly.		ATCA U218-77 Grantsvl		PUTR U72-76 Eureka		ARNO U4-74 Alton		COST U21-73 Mona	
11	KOPR U2-77 C.F.		PUTR U50-71 Spring City		ARNO U9-77 Wingate Mesa		ARTR U9-75 Omar's		ARTR U71-75 Di . Crk.	
10	ATCA U209-74 Fry Cnyn.		ATCA U36-71 Excel Canyon		EULA U40-77 Sunglow Park				EULA U10-77 Hatch	
9	ARNO U14-74 Alton		ATCO U23-74 Ephraim		KOPR U1-76 C.F.		COST U24-69 Richfield		ARTRw U2-76 Omar's	
8	ARTRv U9-75 Omar's		ARTRw U2-77 Wyoming		ARTR U70-76 Moab		PUTR U11-71 Reese Fl		ARTR U12-75 Hobble Creek	
7	AGTR Luna Pullman	FEOVdu U3-77 Wash	AGIN U33-71 S.Dak.	AGIN U22-70 Wash.	ELSA U8-73 Omar's	ELSA U8-73 Omar's				
6	ELCI U12-77 C.F.	SIHY U9-74 Gunnison	SIHY U8-73 Ras.Fld.	AGSP U4-75 Reese Fl	AGCR U32-72 Can.	AGIN U22-70 Wash.	AGRI U265 Aberdeen			
5	ELCI U1-71 Manti	ELCI U8-67 Oregon	ELJU U4-75 Manti	ELJU U10-76 Trmntn.	ORHY U23-68	AGSP U4-75 Reese Fl	SIHY U9-74 Gunnison	ORHY U8-62 Ft.Green	ORHY U29-75	
4	ARNO U17-75 W.James	FEOVdu U3-69 Wash.	AGCR U5-74 C.F.	ELJU U12-68 Montana	AGDE U7-75 Omar's	AGCR U32-72 Canada	ELJU U12-68 Montana	ELGI U1-71 Manti	AGSP U1-72 Aberdeen	ORHY U28-75 Ephraim
3	ORHY U29-75 Reese Fl	ORHY U8-62 Ft.Green	ARNO U5-75 Manti	POA spp U1-76 College	AGRI U2-65 Aberdeen	AGDE U7-75 Omar's	ELJU U10-76 Trmntn.	AGIN U33-71 S.Dak.	SIHY U8-73 Rass.Fld	FEOV U3-69 Wash.
2	DAGL U3-76 Dry.Mesa	ORHY U28-75 N.Ephraim	ORHY Nezpar Aberdeen	AGSP Whitmore Aberdeen	AGTR Luna Abrdn.	ORHY U23-68	ELJU U4-75 Manti	ELCI U8-67 Oregon	FEOV U3-70 Wash.	ELCI U12-77 C.F.
1	FEOVdu U3-70 Wash.	AGSP U1-72 Abrdn.	AGRI Sodar	ELCI P5797	PO spp U1-76 College	FEOV U3-77 Wash.	ARNO U5-75 Manti	AGCR U5-74 C.F.	ARNO U17-75 W.James	DAGL U3-76 Dry. Mes.

← Row Number →

	200	190	180	170	160	150	140	130	120	110
20									ATCA ATCO U73-74 C.F.	
19	ARTRv U49-77 Hobl.Crk.		ARNO U17-75 W.James		ARNO U5-75 Manti		ARNO U17-75 W. James		ARTRw U2-76 Omen's	
18	ARNO U5-75 Manti		PUTR U31-76 Ft.Green		KOPR U12-77 C.F.		CEMO U44-68 Richfield		ATCO U21-74 Mex.Hat	
17	ATCO U2-73 Gunnison		COST U20-75 A.F.		COST U21-73 Mona		ARTRv U49-77 Willow		ARTR U70-75 Moab	
16	ARTRv U37-76 Wyoming		PUTR U102-69 Tropic Res.		ARTRv U19-75 Salina Canyon		PUTR U72-76 Eureka		ARTRw U2-77 Wyom.	
15	ARTR U74-75 Dove Crk.		PUTR U31-76 Ft.Green		ARTRv U7-77 Spr.City		PUTR U111-71 Reese Fl.		COST U24-69 Richfield	
14	EULA U45-77 Blk. Mt.		ARTRv U8-74 Top Maple Canyon		ATCA U88-74 Jericho		PUTR U50-71 Sp. City		ATCA U36-71 Excel. Canyon	
13	ARTR U71-75 Dia.Fk.		ARTR U1-75 H. Crk		ATCA U117-77 BookCliffs		ATCO U23-74 Ephraim		KOPR U18-76 C.F.	
12	COST U23-67 Blk.Mt.		ATCO U21-74 Mex.Hat		ARTRv U5-71 Fairview Canyon		ATCA U218-77 Gransvl.		ARNO U9-77 Wingate Mesa	
11	ARTRw U7-77 Wyo.		KOPR U8-77 C.F.		KOPR U14-77 C.F.		CEMO U41-63 SFNF		ATCA U92-77 Huntgt.	
10	EULA U40-77 Sunglow Park		CEMO U28-63 Salina Canyon		CEMO U7-67 Ephraim Canyon		ARNO U27-73 Beaver Bench		ARNO U26-73 Nevada	
9	EULA U-10-77 Hatch		CEMO U44-68 Richfield		PUTR U88-75 Oregon		PUTR U28-76 C.Olsen		ATCAa U124-77 Montana	
8	EULA U54-77 WR Ridge		KOPR U12-77 C.F.		ATCO U2-73 Gunnison		ATCA U103-74 C.F.		PUTR U47-70 Colo.	
7	LILE U15-75 Cdr.Pt	VIMU U10-75 12-Mile Canyon	PEPA U-5-73 Rass.Fl	ASGA U7-73 Turkey	ASCI U9-72 Maj.Fl.	PEPA U5-73 Rass.Fl.	LILE U15-75 Cdr.Pt.	ASCI U15-76 Wyo.	PEPA U14-77 Nephi Canyon	ASGP Whitmore
6	LILE U16-74 ReeseFl.	PEEA U4-70 RassFld	PEEA U1-70 Payson	ASCI U18-77 Aberdn	MESAn U59-76 Idaho	ASCI U9-72 Maj.Fl	PEEA U1-70 Payson	PEEA U4-70 RassFld.	VIMU U10-75 12-mile	ORHY NezPer
5	PEEA U2-70 Payson	ASCI U15-76 Wyoming	MEOF U16-77 S.Dak.	LILE U7-73 Blk.Hl.	LILE U20-73 Jericho	PEEA U2-70 Payson Canyon	MESAn U59-76 Idaho	LILE U16-74 ReeseFl.	LILE U9-76 Montana	AGRI Sodar
4	VIMU U8-76 Philly Field	MEOF U11-74 Minn.	SAMI U21-76 USSR	LILE U9-76 Mont.	PEPA U14-77 Nephi Canyon	LILE U7-73 Black Hills	LILE U20-73 Jericho	ASCI U19-77 Mont.	SAMI U21-76 USSR	ELCI P5 [illegible]
3	ASFA U12-75 ReeseFl.	SAMI U22-77 College Farm	PEPA U12-73 Cedar City	SAMI U5-75 Maxfld.	ASCI U19-77 Com. Mont.	SAMI U22-77 College Farm	ASGA U4-73 College Farm	MEOF U10-77 S.Dak.	MEOF U11-74 Minn.	PEHU U2-73 SaltLak
2	SAMI U22-77 Oregon	PEHU U3-75 Bld.Mt.	HEUN U1-77 Ephraim	PEEA U7-70 Payson	HEUT U12-69 Duchsne.	ASCI U18-67 Aberdn.	VIMU U8-76 Philly Field	PEEA U7-70 Payson	PEHU U3-73 Bld.Mt.	MESA U4-76 Idaho
1	MESA U14-76 Idaho	MESA U57-67 Nebr.	PEHU U2-73 Slt Lake	PEPA U12-73 Cedar City	HEUN U1-77 Ephraim	SAMI U5-75 Mayfld.	ASFA U12-75 ReeseFl	HEUT U12-69 Duchsne	SAMI U13-77 Oregon	MESA U57-67 Nebrask

GRASSES

Alpha Code	Scientific Name	U#	Plot # *	Location	Common Name
AGCR	Agropyron cristatum	U32-72	60-6	Canada	Fairway wheatgrass
AGCR	Agropyron cristatum	U5-74	30-1	College Farm	Fairway wheatgrass
AGDE	Agropyron desertorum	U7-75	60-4	Oman's	Crested wheatgrass
AGIN	Agropyron intermedium	U33-71	80-7	South Dakota	Intermediate wheatgrass
AGIN	Agropyron intermedium	U22-70	50-6	Northrup-King, Wash.	Intermediate wheatgrass
AGRI	Agropyron riparium	U2-65	60-3	Aberdeen	Streambank wheatgrass
AGRI	Agropyron riparium		110-5	Sodak	Streambank wheatgrass
AGSP	Agropyron spicatum	U4-75	50-5	Reese Flat	Bearded Bluebunch wheatgrass
AGSPI	Agropyron spicatum inerme	U1-72	90-1	Whitmore	Beardless Bluebunch wheatgrass
DAGL	Dactylis glomerata	U3-76	100-1	College Farm	Orchard grass
ELCI	Elymus cinereus	U8-67	90-5	Oregon	Great Basin wildrye
ELCI	Elymus cinereus	U12-77	100-6	College Farm	Great Basin wildrye
ELCI	Elymus cinereus		110-4	P 5 79 7	Great Basin wildrye
ELGI	Elymus giganteus	U1-71	100-5	Manti Dump	Russian wildrye
ELJU	Elymus junceus	U4-75	80-5	Manti	Russian wildrye
ELJU	Elymus junceus	U12-68	70-4	Montana	Russian wildrye
ELJU	Elymus junceus	U10-76	70-5	Tremonton	Russian wildrye
ELSA	Elymus sabulosus	U8-76	60-7	Oman's	Sobulasa wildrye
FEOVdu	Festuca ovina duriuscula	U3-69	90-4		Hard Sheep fescue
FEOVdu	Festuca ovina duriuscula	U3-77	90-7	Washington	Hard Sheep fescue
FEOVdu	Festuca ovina duriuscula	U3-70	100-1	Washington	Hard Sheep fescue
ORHY	Oryzopsis hymenoides	U29-75	100-3	Reese Flat	Indian ricegrass
ORHY	Oryzopsis hymenoides	U8-62	90-3	Reese Flat	Indian ricegrass
ORHY	Oryzopsis hymenoides	U28-75	90-2	North of Ephraim	Indian ricegrass
ORHY	Oryzopsis hymenoides	U23-68	60-5		Indian ricegrass
ORHY	Oryzopsis hymenoides		110-7	NezPer	Indian ricegrass
SIHY	Sitanion hystrix	U9-74	90-6	Gunnison	Bottlebrush Squirreltail
SIHY	Sitanion hystrix	U8-73	80-6	Rassmussen Field	Bottlebrush Squirreltail

*NOTE: The first number in the Plot # is the row and the second number is the plot.

FORBS

Alpha Code	Scientific Name	U#	Plot #*	Location	Common Name
ASCI	Astragalus cibarius	U15-76	190-5	Wyoming	Silky milkvetch
			130-7	College Farm	
			160-3		
		U9-72	150-6	Majors Field	
			160-7		
		U19-77	130-4	Montana	
		U18-67	150-2	Aberdeen	
		U18-77	170-6	Aberdeen	
ASFA	Astragalus folcatus	U12-75	200-3	Reese Flat	Sicklepod milkvetch
			140-1		
ASGA	Astragalus galegiformus	U4-73	140-3	Turkey	Galegiformus
		U7-73	170-7	Turkey	
			110-7	Whitmore	
HEUN	Helianthella uniflora	U1-77	180-2	Ephraim Canyon	Oneflower helianthella
			160-1		
HEUT		U12-69	160-2	Duchesne	
			130-1		
LILE	Linum lewisii	U20-73	140-4	Jericho	Lewis flax
			160-5		
		U9-76	170-4	Montana	
			120-5		
		U7-73	150-4	Black Hills	
			170-5		
		U16-74	200-6	Reese Flat	
			130-5		
		U15-75	200-7	Cedar Point	
			140-7		
MEOF	Melilotus officinalis	U11-74	120-3	Minnesota	Yellow sweetclover
			190-4		
		U10-77	130-3	South Dakota	
		U16-77	180-5	South Dakota	
MESA1	Medicago sativa ladak	U4-76	110-2	Idaho	Ladak alfalfa
			200-1		

*NOTE: The first number in the Plot # is the row and the second number is the plot.

(FORBS Continued)

Alpha Code	Scientific Name	U#	Plot # *	Location	Common Name
MESAn	Medicago sativa nomad	U59-76	140-5	Idaho	Nomad Alfalfa
			160-6		
MESAv	Medicago sativa rambler	U57-67	190-1	Nebraska	Rambler alfalfa
			110-1		
PEEA	Penstemon eatonii	U1-70	180-6	Payson Canyon	Eaton penstemon
			140-6		
		U7-70	170-2		
			130-2		
		U4-70	190-6	Dahl's	
			130-6	Rasmussen Field	
		U2-70	150-5	Payson Canyon	
			200-5		
PEHU	Penstemon humilis	U2-73	180-1	Salt Lake	Low penstemon
			110-1		
		U3-73	120-2	Bald Mountain	
			190-2		
PEPA	Penstemon palmeri	U14-77	160-4	Nephi Canyon	Palmer penstemon
			120-7		
		U5-73	180-7	Rasmussen Field	
			150-7		
		U12-73	170-1	Cedar City	
			180-3		
SAMI	Sanguisorba minor	U13-77	120-1	Oregon	Small burnet
		U5-75	150-1	Mayfield	
			170-3		
		U22-77	190-3	Oregon	
			150-3		
			200-2		
		U21-76	120-4	U.S.S.R	
			180-4		
VIMUn	Viguiera multiflora nevadensis	U10-75	120-6	12-Mile Canyon	Nevada showy goldeneye
			200-7		
		U8-76	140-2	Philly Field	
			200-4		

*NOTE: The first number in the Plot # is the row and the second number is the plot.

TREES AND SHRUBS

Alpha Code	Scientific Name	U#	Plot # *	Location	Common Name
ARNO	Artemisia nova	U17-75	100-4	Walt James	Black Sagebrush
			140-19	College Farm	
			180-19		
		U5-75	160-19	Manti Dump	
			200-18		
		U14-74	100-9	Alton	
		U26-73	40-16	Nevada	
		U27-73	100-15	Beaver Bench	
			120-10		
			140-10		
		U9-77	60-11	Wingate Mesa	
			120-12		
ARTR	Artemisia tridentata	U70-76	60-8	Moab	Basin big sagebrush
			120-17		
		U74-75	20-11	Diamond Creek	
			200-13		
ARTRv	Artemisia tridentata vaseyana	U49-77	200-19	Willow Creek	Mountain big sagebrush
			140-17		
		U1-75	180-13	Hobble Creek	
		U5-71	80-17	Gooseberry Flat	
			160-12		
		U9-75	100-8	Pete Bishop's Log	
		U7-77	60-14	Spring City	
		U8-74	100-18	Top Maple Canyon	
			180-14		
		U19-75	160-16	Salina Canyon	
ARTRw	Artemisia tridentata wyoming-ensis	U2-77	80-8	Pinedale, Wyoming	Wyoming big sagebrush
			120-16		
		U7-77	20-14	Lone Pine	
			160-15		
			200-11		
		U1-76	20-49	Trough Springs	
ARTR	Artemisia tridentata	U76-76	80-19	Clear Creek (EDM)	Basin big sagebrush
ARTRv	Artemisia tridentata vaseyana		160-19	Dove Creek	Mountain big sagebrush
		U54-77	40-19	Mouth of Green Canyon	

*NOTE: The first number in the Plot # is the row number and the second number is the plot.

TREES and SHRUBS (Cont'd)

Alpha Code	Scientific Name	U#	Plot # *	Location	Common Name
ARTRw	Artemisia tridentata wyomingensis	U2-76	20-9	Omen's	Wyoming big sagebrush
			120-19		
		U37-76	20-18	Evanston	
			200-16		
ARSP	Artemisia spinescens		60-19	EDM	Bud sagebrush
ATCA	Atriplex canescens	U103-74	100-14	College Farm	Fourwing saltbush
			140-8		
		U92-77	80-16	Huntington	
			120-11		
		U73-74	120-20	College Farm	
		U209-74	100-10	Try Canyon	
		U117-77	20-15	Book Cliffs	
			160-13		
		U218-77	80-12	Grantsville	
			140-12		
		U36-71	80-10	Excel Canyon	
			120-14		
		U88-74	40-14	Jericho	
			160-14		
		U124-77	80-14	Bridger, Montana	
			120-9		
ATCO	Atriplex confertifolia	U2-73	200-17	Gunnison	Shadscale
			160-8		
		U21-74	120-18	Mexican Hat	
			180-12		
		U23-74	80-9	Ephraim Dump	
			140-13		
CEMO	Cercocarpus montanus	U41-63	80-15	SFNF	Mountain mahogany
			140-11		
		U7-67	160-10	Ephraim Canyon	
		U28-63	80-18	Salina Canyon	
			180-10		
CHNA	Chrysothamnus nauseosus salicifolius	5-77	100-20	Sardine Pass	Mountain rubber rabbitbrush
CEMO	Cercocarpus montanus	U44-68	140-18	West of Richfield	Mountain mahogany
			180-9		

*NOTE: The first number in the Plot # is the row and the second number is the plot.

TREES AND SHRUBS (Cont'd)

Alpha Code	Scientific Name	U#	Plot # *	Location	Common Name
COST	Cowania stansburiana	U23-67	100-17	Black Mountain	Stansbury Cliffrose
			200-12		
		U20-75	180-17	American Fork	
		U21-73	20-12	Mona	
			160-17		
		U24-69	40-9	North of Richfield	
			120-15		
KOPR	Kochia prostrata	U18-76	120-13	USSR	Prostrate summer cypress
		U8-77	20-16	USSR	
			180-11		
		U12-77	160-18	USSR	
			150-8		
		U1-76	60-9	USSR	
		U14-77	160-11	USSR	
		U2-77	100-11	USSR	
			40-15		
PUTR	Purshia tridentata	U111-71	140-15	Reese Flat	Antelope bitterbrush
		U93-69	100-12	Cove Valley	
		U31-76	160-18	Fountain Green	
			180-15		
		U88-75	60-17	Bend, Oregon	
			160-9		
		U47-70	100-13	Maybell, Colorado	
			120-8		
		U50-71	80-11	Spring City	
			140-14		
		U28-76	80-13	Cliff Olsen	
			140-9		
		U72-76	60-12	Eureka	
			140-16		
		U102-76	60-18	Tropic Reservoir	
		U102-69	180-16	Tropic Reservoir	

*NOTE: The first number in the Plot # is the row and the second number is the plot.

TREES & SHRUBS (Cont'd)

Alpha Code	Scientific Name	U#	Plot # *	Location	Common Name
CELA	Ceratoides lanata	U-40-77	60-10	Sunglow Park	Common winterfat
			200-10		
		U10-77	20-10	Hatch	
			200-9		
		U45-77	160-16	Diamond Mountain	
		U54-77	20-17	Wagon Road Ridge	
			200-8		

*NOTE: The first number in the Plot # is the row and the second number is the plot.